



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

JUL 07 2011

Colonel Keith A. Landry
District Engineer
Louisville District Corps of Engineers
Attn: Lee Anne Devine (Regulatory Branch)
OP-FN, Room 752
P.O. Box 59
Louisville, Kentucky 40201-0059

Dear Colonel Landry:

The U.S. Environmental Protection Agency, Region 4, has been coordinating with your staff on Leeco, Inc.'s proposed Stacy Branch coal mine in Perry and Knott Counties, Kentucky (LRL-2007-0217; #897-0480). Our emphasis throughout the discussions has been to reduce the anticipated direct and indirect adverse impacts on waters of the U.S. as a result of the proposed surface mine. I want to acknowledge the efforts of the U.S. Army Corps of Engineers, Louisville District (USACE – Louisville District) and the representatives of the James River Coal Company, and its subsidiary Leeco, Inc., to coordinate with the EPA in evaluating options to further avoid and minimize project impacts. We are pleased that the James River Coal Company (JRCC) has agreed to the mine design alternative involving a single hollow fill as a practicable alternative and that they are moving forward with revised applications under the Surface Mining Control and Reclamation Act (SMCRA) and Section 404 of the Clean Water Act (CWA).

The purpose of this letter is to summarize the EPA's understanding of the key revisions to the Leeco Stacy Branch project that are being made by the Company and will be incorporated into the revised CWA section 404 permit application. We are also enclosing our recommendations for appropriate permit special conditions to reflect the improvements being made to the project and suggested revisions to the mitigation plan. The following four sections summarize revisions to the mine designed to further avoid and minimize environmental and water quality impacts and to improve adaptive management steps.

1. Reduce Mining Impacts from Six Hollow Fills to One.

The original design for the Stacy Branch mine contemplated permanent and temporary impacts from six hollow fills located in six streams at the mining site (total permanent and temporary impacts were estimated at 22,861 linear feet of stream). JRCC has agreed to revise the mine plan to build a single hollow fill and sediment pond provided they receive proper authorization from the Kentucky Department of Natural Resources and the USACE – Louisville District. In doing so, they will eliminate the need for the additional hollow fills by reducing excess spoil and increasing the backstack to more closely resemble the rolling topography of the site's pre-mining condition. The company will also construct a portion of the single remaining valley fill with a canted surface to reduce linear footage of stream impacts. These revisions

collectively will reduce direct impacts to waters of the U.S. by almost 25 percent. In addition, by consolidating multiple fills into a single fill placed in a single watershed, the potentially damaging indirect water quality impacts on receiving waters as a result of discharge from the fill will be significantly reduced.

2. Improve Water Quality Protection Through Adaptive Management.

We are encouraged by the company's commitment to implement robust best management practices (BMP) for hollow fill construction that will help reduce the potential for downstream water quality impacts. Also, in response to potential water quality concerns, JRCC has agreed to a conductivity trigger of 400 $\mu\text{S}/\text{cm}$ as a special condition of a CWA Section 404 permit. If this level is exceeded at the outfall of the sediment pond, the company will undertake additional adaptive management actions to reduce conductivity in water draining from the fill, as well as implement restoration projects in the Stacy Branch watershed aimed at reducing background levels of conductivity to protect against further increases in conductivity in the already impacted watershed. The special conditions should require the applicant to coordinate with the USACE – Louisville District, the EPA, and others as appropriate to identify, design, and implement projects in the Stacy Branch watershed aimed at reducing specific conductance. Projects designed to offset downstream water quality impacts by improving upstream water quality should take place within the Stacy Branch watershed. Recognizing that Kentucky's in-lieu fee program does not provide for water quality improvements specifically within the Stacy Branch watershed, we believe that use of this program is not appropriate to mitigate for increases in conductivity associated with the Stacy Branch mine.

Should the USACE – Louisville District determine that the revised project can be authorized in accordance with its regulations, the EPA recommends that the CWA Section 404 permit include special conditions for implementing best management practices during fill construction and for implementing appropriate adaptive management procedures if the conductivity trigger of 400 $\mu\text{S}/\text{cm}$ is exceeded. As you have requested in the past, we will work closely with you to develop specific language for the special conditions that address our concerns. We are enclosing suggested language for your consideration. These recommended special conditions are an updated version of the conditions provided as an enclosure to EPA's December 14, 2010 letter on this project.

3. Conduct Chemical and Biological Stream Monitoring.

Assessing the effectiveness of BMPs in protecting water quality and biological conditions in project area streams is extremely important. JRCC has agreed to conduct such monitoring for a broad suite of water quality parameters for an appropriate duration at both the outfall of the sediment pond and in the receiving stream. This monitoring is intended to assure potential changes in water quality or biological integrity can be detected in real time. This information will enable timely implementation of necessary adaptive management measures if trends show levels of concern.

In addition, the applicant's Cumulative Impact Assessment for the North Fork Kentucky River Watershed identified existing water quality and biological impacts to streams in the watershed. Many of these impacts may result from past and/or ongoing surface coal mining activities. Therefore, the EPA recommends that monitoring of specific conductance be conducted

downstream of the proposed operation in Stacy Branch, Sugar Branch, and Yellow Creek and commence upon authorization of activities at the project site. Several months of monitoring data from streams in the project area should be collected to establish a baseline conductivity level that will best facilitate post-construction assessment of the above referenced alternative mine design and construction techniques (i.e. BMPs) and any necessary off-set projects undertaken in the Stacy Branch watershed. We have also enclosed suggested language for the monitoring conditions for your consideration.

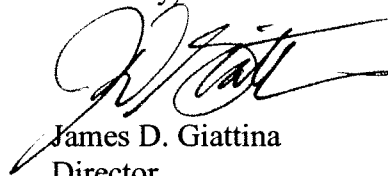
4. Create 3,100 Linear Feet of Stream on Undisturbed Land Immediately Adjacent to Filled Tributary.

JRCC has proposed to create 3,100 feet of stream adjacent to the toe of the single hollow fill at Stacy Branch using new methods designed to create streams on undisturbed soils using material excavated from those stream reaches proposed to be filled for this project. We are interested in working with the USACE – Louisville District and JRCC to assess the effectiveness of the created stream in replacing lost functions. We recommend that a functional assessment of the stream be conducted after construction using an appropriate assessment methodology to evaluate its effectiveness in performing natural stream functions. Depending on the outcome of this assessment at final SMCRA bond release, the EPA would be willing to work with the Corps and the applicant to investigate the potential for this stream reach to provide compensatory mitigation for future authorized projects within the same watershed. However, consistent with applicable mitigation regulations, baseline conditions for this stream reach would be based on the existing conditions at the time that its use as mitigation was proposed.

In conclusion, I want to thank you and your staff for working with EPA on this permit application. The suggested permit conditions included in the enclosure are consistent with the recommended special conditions that we provided in our December 14, 2010 letter, which we have updated to reflect the alternative design discussed above.

As Leeco, Inc. seeks modifications to its SMCRA permit and applies for a new Section 404 permit, the EPA appreciates the opportunity to work closely with you to develop appropriate special conditions. We also look forward to reviewing the draft final Section 404 permit for the revised project when a draft is completed. If you have any questions, please call me at (404) 562-9345 or Eric Somerville of my staff at (706) 355-8514.

Sincerely,



James D. Giattina

Director

Water Protection Division

Enclosure

cc: Jim Townsend, Louisville District, Louisville, KY
Todd Williams, Louisville District, Sassafra, KY

William James, Nashville District, Nashville, TN
Joe Blackburn, Office of Surface Mining, Lexington, KY
Lee Andrews, U.S. Fish and Wildlife Service, Frankfort, KY
Carrie Allison, U.S. Fish and Wildlife Service, Frankfort, KY
Carl Campbell, Kentucky Department for Natural Resources, Frankfort, KY
Bruce Scott, Kentucky Department for Environmental Protection, Frankfort, KY
Sandy Gruzesky, Kentucky Division of Water, Frankfort, KY

Enclosure

Recommendations for the Stacy Branch Mine Mitigation Plan

Recognizing the revisions to the mine design and the consequent reduction in anticipated direct impacts to jurisdictional waters of the U.S., the applicant's compensatory mitigation plan will need to be revised. As this revision is undertaken, we want to call to the Corps attention concerns that EPA has previously expressed with regard to earlier proposals for mitigation that we believe remain relevant. It is EPA's understanding that Corps staff shares these concerns.

- The EPA understands that the single sediment pond now contemplated to treat the discharge from the single hollow fill will remain in place for the life of the mine, estimated to be approximately 10 years. As we have noted in discussions with your staff, the EPA considers such duration to be beyond a reasonable interpretation of the term "temporary," and believes that the creation of the sediment ponds in waters of the U.S. should be mitigated contemporaneously with the mining impacts themselves.
- If the USACE – Louisville District and the permit applicant wish to continue to pursue the Spring Branch mitigation site in Wolfe County, Kentucky, as compensatory mitigation *solely* for the Stacy Branch Mine, the EPA believes that would be an appropriate approach. Alternatively, the EPA would also support appropriate payment to the Kentucky Department of Fish and Wildlife Resources Wetland and Stream Mitigation Program to satisfy compensatory mitigation requirements for direct environmental impacts of the proposed Stacy Branch Mine.
- If the existing sediment pond in Pidgeonroost Hollow, Perry County, Kentucky (referred to as Bates Pond) remains a viable mitigation alternative, the EPA recommends that the USACE – Louisville District require the applicant to modify the mitigation site design to prevent the transport of the acidic water downstream, and to develop compensatory mitigation performance criteria that will ensure that the proposed compensatory mitigation does not cause or contribute to downstream water quality problems.

Recommended Wording for Special Permit and Monitoring Conditions

I. Recommended Special Permit Conditions

- A. The permittee shall submit a detailed plan to the U.S. Army Corps of Engineers Louisville District (Corps) and the U.S. Environmental Protection Agency, Region 4 (EPA) for implementing mine design and hollow fill construction alternatives and best management practices (BMPs) to minimize potential adverse effects on water quality, especially as a result of total dissolved solids (TDS) and specific conductance (SC, or

conductivity)), during the placement of fill material into waters of the U.S. during mining, reclamation and the construction of the hollow fill. This plan must be approved by the Corps, and transmitted to the EPA, prior to discharge of any dredged or fill material into any water of the U.S. Based on the applicant's prior willingness to incorporate such measures, proposed actions should include, but are not necessarily limited to, the following BMPs to the maximum extent applicable with the canted fill design¹:

General BMPs

- Existing vegetation will be retained to the extent practicable.
- Highly reactive strata units (TDS and/or sulfate producing geologic strata²) will be identified and isolated as part of the mining process.
- Acidic and toxic material encountered during the mining operation will be handled in accordance with the approved Toxic Materials Handling Plan in the project's SMCRA permit.
- Topsoil or topsoil substitute, as approved by the Kentucky Department for Natural Resources (KDNR) in the SMCRA permit for this project will be stockpiled and managed so that re-graded areas can be covered with a layer of topsoil or topsoil substitute and re-vegetated as quickly as practicable.

Hollow Fill Construction/Reclamation BMPs

- Implement hollow fill design alternatives that reduce infiltration (e.g. compact surface lifts, crown the fill surface) and control flow through the fill to avoid contact time between water and highly reactive materials (i.e. TDS and/or sulfate producing geologic strata²).
- The fill will be constructed in a "bottom-up" manner with 50 foot vertical lifts.
- Low-reactive durable rock wrapped in filter fabric to prevent clogging will be used for construction of the underdrain. Identification of low-reactive rock will be based on low Potential Acidity values³.
- Diversions will be constructed around the fill so that surface runoff from upland areas will be intercepted and not infiltrate the fill. Diversion channels will be constructed to pass flows as dictated by the SMCRA regulations.
- The material placed at the top of the fill will be compacted as it is placed to form an earthen cap reducing the void space between the particles and the associated potential for infiltration of water.
- The fill will be vegetated during construction after being brought to final grade to reduce erosion of the material.

¹ The listed BMPs were proposed by the applicant in supplemental materials received by the EPA on November 4 and November 24, 2010.

² Although not specifically proposed by the permittee, "highly reactive materials" may be defined by Potential Acidity and any appropriate field or lab test agreeable to the permittee, the Corps and the EPA.

³ Although not specifically proposed by the permittee, "low-reactive durable rock" may also be defined as the most weathered upper strata and by any appropriate field or lab test agreeable to the permittee, the Corps and the EPA.

Sediment Control BMPs

- Temporary sediment control structures such as silt fence, straw bales, rock checks, dikes, and/or channel barriers will be used, as necessary, to prevent the transport of sediment downstream.
- Sediment and erosion control measures will be inspected by a qualified individual appointed by the applicant's management at least twice per month and after every rainfall exceeding 0.5 inches in a 24 hour period (as measured at the project site) to ensure the structure and measures are functioning properly and to identify any required maintenance.
- Chemical treatment of the pond will be used, if necessary and practicable to facilitate compliance with the project's KPDES permit.

In addition to the BMPs listed above, the EPA also recommends utilizing the Forest Reclamation Approach (FRA).

- B. The permittee shall submit documentation to the Corps and the EPA indicating all BMPs employed to minimize TDS and SC during the placement of fill material into waters of the U.S. and before and during mining and reclamation activities, including the construction of the backstacks and hollow fill. The initial documentation must be submitted within 30 days of site preparation and commencement of construction of the rock underdrain. After this initial submittal, the permittee shall submit documentation every 6 months. All physical and water quality monitoring data and analyses (effluent hydrologic permanence, effluent chemical monitoring, AMP trigger analysis, in-stream chemical monitoring, mitigation monitoring, and off-set environmental projects, if applicable) shall be reported to the Corps and the EPA within 30 days of being collected. All biological monitoring data and analyses shall be submitted to the Corps and the EPA within 60 days of being collected.
- C. The permittee shall monitor the effluent of the in-stream sediment pond for SC two times per month and submit monthly flow-weighted conductivity, \bar{K} , to the Corps and the EPA following the commencement of discharges of material into waters of the U.S. The applicant must submit these data monthly to the agencies and must begin data collection and submittal immediately upon permit issuance and continue until final bond release. Monthly flow-weighted SC shall be calculated as follows:

$$\bar{K} = \frac{\sum_i (Q_i \times K_i)}{\sum_i Q_i}$$

where:

\bar{K} = monthly flow-weighted SC, $\mu\text{S}/\text{cm}$

Q_i = flow for the i^{th} sample, cfs

K_i = SC for the i^{th} sample, $\mu\text{S}/\text{cm}$.

The six-month rolling average for monthly flow-weighted SC is then determined simply as the average of the six preceding months' monthly flow-weighted SC. This rolling average is recomputed on a monthly basis.

The monthly flow-weighted conductivity, \overline{K} , will be plotted as a time series and the six-month rolling average provided as both a trend line and in a data table beginning immediately upon permit issuance. The six-month rolling average SC shall be plotted as soon as requisite data is available, and the AMP threshold will not be triggered any earlier than six months following the initial discharge of dredged or fill material into waters of the U.S. If the six-month rolling average of SC measured at the pond outfall exceeds 400 $\mu\text{S}/\text{cm}$, then the permittee will conduct an analysis of the sources of elevated SC and develop a Phase I AMP to reduce SC and TDS. Examples of design alternatives, BMPs and treatment technologies to include in the Phase I AMP may include, but are not limited to:

- Accelerated revegetation efforts (e.g. enhanced rates and density of replanting);
- Land application of sediment pond effluent to enhance evapotranspiration and thereby minimize pond discharge;
- The use of flocculents designed specifically to reduce total suspended solids/TDS/SC (with appropriate approval from the Kentucky Division of Water, KDOW); and
- Floating siphons to decant the cleanest water prior to discharge to receiving streams.

In addition, the company's consultant will also prepare a plan to implement off-set environmental projects (i.e., remediation of existing sources of conductivity) in the Stacy Branch watershed to mitigate elevated SC from the Stacy Branch Mine. That plan will include identification of one or more applicable projects, data illustrating each potential project site's contribution to water quality degradation, pertinent plans and specifications for project implementation, and a proposed monitoring plan to evaluate the efficacy of the project.

The Phase I AMP shall be implemented within 45 days of written approval by the Corps. Implementation of the Phase I AMP will continue until the six-month rolling average for SC declines below 400 $\mu\text{S}/\text{cm}$.

If the six-month rolling average for SC remains greater than 400 $\mu\text{S}/\text{cm}$ for six months after implementation of the Phase I AMP, the permittee will retain, within 30 days, a consultant mutually agreed upon by the permittee, and the Corps, to prepare a plan within 90 days for additional actions to reduce effluent SC (a Phase II AMP). These recommendations shall be implemented within 45 days of written approval by the Corps.

D. Background monitoring (in-stream).

The permittee shall monitor in-stream SC two times per month in Stacy Branch, Sugar Creek, and Yellow Creek in order to establish a record of baseline specific conductance and document seasonal trends against which future project impacts may be evaluated. The applicant must collect, assess, and report these data to the Corps and the EPA, and must begin data collection and submittal immediately upon permit issuance and continue until final bond release.

In-stream SC monitoring in the Stacy Branch watershed will take place at proposed in-stream chemical water quality monitoring locations described in Special Condition II.C(4). In-stream SC monitoring locations in the Yellow Creek watershed will include the following:

- a. One in-stream monitoring site located in Yellow Creek immediately upstream of its confluence with the unnamed tributary draining the valley where the former hollow fill #5 was to be located;
- b. One in-stream monitoring site located in Yellow Creek immediately upstream of its confluence with Sugar Branch, which drains the valley where the former hollow fill #6 was to be located;
- c. One in-stream monitoring site located in Sugar Branch immediately upstream of its confluence with Yellow Creek, but upstream of any potential backwater effects from Yellow Creek;
- d. One in-stream monitoring site located in Yellow Creek immediately upstream of its confluence with Carr Fork, but upstream of any potential backwater effects from Carr Fork;
- f. One in-stream monitoring site located in Carr Fork immediately downstream of its confluence with Yellow Creek, but taking into account a reasonable length of stream to allow thorough mixing of surface waters (e.g. 10-20 meters).

II. Chemical and Biological Monitoring

A. Effluent Monitoring

1. Parameters and Test Methods

- Hydrologic permanence of outflow from the in-stream pond(s) should be monitored and recorded by a continuously recording measurement device.

- The permittee should perform effluent monitoring of the parameters listed in Table 1, analyzed using EPA Test Methods in 40 CFR Part 136 by an licensed laboratory.⁴
- When conducting effluent monitoring, the permittee must follow the appropriate and approved Kentucky Division of Water (KDOW) protocols, standard operating procedures, and quality assurance requirements as specified in the “Quality Assurance Project Plan (QAPP) for Individual Coal Mining Permits: Focus Monitoring for Water Quality, Biological Communities and Habitat Conditions.” The QAPP shall be submitted to the Corps, the EPA R4 and KDOW within 30 days of permit issuance. The Corps shall approve the QAPP before it is implemented. The protocols are available on KDOW’s website at:
<http://water.ky.gov/permitting/Pages/Mining.aspx><http://water.ky.gov/permitting/Pages/Mining.aspx>

2. Sample Type

Grab samples shall be taken. Grab sample is defined as an individual sample of at least 100 milliliters collected at a randomly selected time over a period not exceeding fifteen minutes.

3. Sampling Frequency

- The sampling frequency for each parameter is noted in Table 1. If the six-month rolling average SC at the pond outfall remains below 400 $\mu\text{S}/\text{cm}$ for twelve (12) consecutive months following the stage of the hollow fill construction at which overburden material is placed in the hollow fill to the elevation of the base coal seam being mined, the frequency of analytical water quality monitoring of all parameters in Table 1 that have not exceeded applicable State water quality standards during the previous twelve (12) consecutive months may be modified to once (1) per year.
- Provision 3(i) does not apply to the monitoring of SC, discharge, temperature, pH, turbidity or dissolved oxygen at either the pond outfall or in-stream locations described at Special Condition II.C.4, nor does it apply to the monitoring of precipitation from as centrally located a position within the project boundaries as possible.
- If the six-month rolling average SC determined from the sediment pond outfall increases to a level in excess of 400 $\mu\text{S}/\text{cm}$, analytical water quality monitoring described in this section will increase to a frequency of twice per month, as indicated in Table 1, for as long as the six-month rolling average SC remains above 400 $\mu\text{S}/\text{cm}$. If applicable State water quality standards for those parameters listed in Part II of Table 1 are not exceeded for three (3) consecutive months of analytical water quality monitoring at this increased

⁴ Where EPA has approved more than one analytical method for a pollutant, the Agency expects that applicants and permittees would select methods that are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Criteria. Permit applicants should not use a less sensitive or less appropriate method, thus masking the presence of a pollutant in the discharge, when an EPA-approved method is available that can quantify the pollutant concentration at the lower levels needed for permit decision making. For purposes of permit applications and compliance monitoring, a method is “sufficiently sensitive” when (1) the method’s quantitation level is at or below the level of the applicable water quality criterion for the pollutant or (2) the method’s quantitation level is above the applicable water quality criterion, but the amount of pollutant in a facility’s discharge is high enough that the method detects and quantifies the level of pollutant in the discharge.

Table 1 - Supplemental effluent and in-stream water quality monitoring parameters.

Parameter	Units	Method	Sample Frequency ¹
Part I			
Bicarbonate Alkalinity	mg/l		Quarterly
Chlorides	mg/l	EPA 300.0	Quarterly
Discharge	cfs	DOWSOP03019*	Quarterly ²
Dissolved oxygen	mg/l	DOWSOP03014*	Quarterly
Hardness (as CaCO ₃)	mg/l	SM 2340B	Quarterly
pH	s.u.	DOWSOP03014*	Quarterly
Precipitation	inches		Continuous
Sulfates	mg/l	EPA 300.0	Quarterly
Temperature	Deg C	DOWSOP03014*	Quarterly
Turbidity	Ntu	DOWSOP03014*	Quarterly
Total Dissolved Solids (TDS)	mg/l	SM 2540C	Quarterly
Part II			
Total Calcium	µg/l	EPA 200.7	Quarterly
Total Magnesium	µg/l	EPA 200.7	Quarterly
Total Potassium	µg/l		Quarterly
Total Sodium	µg/l		Quarterly
Total Recoverable Antimony	µg/l	EPA 200.8	Quarterly
Total Recoverable Arsenic	µg/l	EPA 200.8	Quarterly
Total Recoverable Beryllium	µg/l	EPA 200.8	Quarterly
Total Recoverable Cadmium	µg/l	EPA 200.8	Quarterly
Total Recoverable Chromium (III)	µg/l		Quarterly
Total Recoverable Chromium (IV)	µg/l		Quarterly
Total Recoverable Copper	µg/l	EPA 200.8	Quarterly
Total Recoverable Iron	µg/l	EPA 200.8	Quarterly
Total Recoverable Lead	µg/l	EPA 200.8	Quarterly
Total Recoverable Manganese	µg/l	EPA 200.8	Quarterly
Total Recoverable Mercury	µg/l	EPA 1631E or 245.7	Quarterly
Total Recoverable Nickel	µg/l	EPA 200.8	Quarterly
Total Recoverable Selenium	µg/l	EPA 200.8	Quarterly
Total Recoverable Silver	µg/l	EPA 200.8	Quarterly
Total Recoverable Thallium	µg/l	EPA 200.8	Quarterly
Total Recoverable Zinc	µg/l	EPA 200.8	Quarterly

¹ The sample frequency increases to twice per month should the in-stream specific conductivity exceed 400 µS/cm.

² Discharge is measured twice per month concurrent with SC monitoring per Special Permit Conditions I.C and I.D. Discharge is also measured at the time of analytical water quality sampling required according to Special Permit Condition II.A.3.

* KDOW, 2009. *In situ* Water Quality Measurements and Meter Calibration Standard Operating Procedure. Kentucky Department for Environmental Protection, Division of Water, Frankfort, Kentucky.

frequency, the frequency of sampling for those parameters may be modified to once (1) per quarter until the provisions of Part i) in this section become applicable.

iv) Samples that are required quarterly should be collected at least ten (10) days apart, and the amount of precipitation for the previous 24-hour and 120-hour periods should be recorded on-site and reported (to the nearest 0.1 inch) as part of the sampling report. Samples that are required twice per month should be collected at least five (5) days apart, and the

amount of precipitation for the previous 24-hour and 120-hour periods should be recorded on-site and reported (to the nearest 0.1 inch) as part of the sampling report.

4. Reporting

Reports shall contain tabulated data (including sample station identification, date, and time) and graphs necessary to present information clearly and concisely, including all such tables and graphs necessary to summarize and present the entire period of record for each parameter and sample station. Latitude and longitude coordinates of all water quality monitoring locations with the applicable datum identified must be provided along with photographs and figures illustrating all sample locations. Calibration records of all *in-situ* multi-probe or single-probe water quality instruments and laboratory reports showing the analytical results must also be submitted.

All results should be clearly labeled with the applicable CWA permit number and KDNR DMP number and submitted to KDOW, the Corps, and the EPA Region 4. Reports shall be submitted as hard copy and electronically as pdf documents on CD (compact disc). All data shall also be submitted in electronic spreadsheet format (e.g. Microsoft Excel or compatible format).

Reports should be sent to: EPA Region 4 Water Protection Division
 Wetlands, Coastal & Oceans Branch, Mining Section
 61 Forsyth Street SW
 Atlanta, GA 30303-8960

B. In-stream Chemical Monitoring

1. Parameters and Test Methods

The permittee should perform in-stream chemical monitoring of the parameters listed in Table 1, and analyzed using EPA Test Methods in 40 CFR Part 136 by an approved licensed laboratory.

When conducting in-stream chemical monitoring, the permittee must follow the appropriate and approved KDOW protocols, standard operating procedures, and quality assurance requirements as specified in the QAPP. The QAPP shall be submitted to the Corps, the EPA R4 and KDOW within 30 days of permit issuance. The Corps will coordinate approval of the QAPP with the agencies. Receiving KDOW approval is not a requirement of the in-stream chemical monitoring Special Permit Condition. The protocols are available on KDOW's website at:

<http://water.ky.gov/permitting/Pages/Mining.aspx><http://water.ky.gov/permitting/Pages/Mining.aspx>

2. Sample Type

Grab samples shall be taken. Grab sample is defined as an individual sample of at least 100 milliliters collected at a randomly selected time over a period not exceeding fifteen minutes.

3. Sampling Frequency

i) The sampling frequency for each parameter is noted in Table 1. If the six-month rolling average SC in the pond outfall remains below 400 $\mu\text{S}/\text{cm}$ for twelve (12) consecutive months following the stage of the hollow fill construction at which overburden material is placed in the hollow fill to the elevation of the base coal seam being mined, the frequency of analytical water quality monitoring of all parameters in Table 1 that have not exceeded applicable State water quality standards during the previous twelve (12) consecutive months may be modified to once (1) per year.

ii) Provision 3(i) does not apply to the monitoring of SC, discharge, temperature, pH, turbidity or dissolved oxygen at either the pond outfall or in-stream locations described at Special Condition II.C(4), nor does it apply to the monitoring of precipitation from as centrally located a position within the project boundaries as possible.

iii) If the six-month rolling average SC determined from the sediment pond outfall increases to a level in excess of 400 $\mu\text{S}/\text{cm}$, analytical water quality monitoring described in this section will increase to a frequency of twice per month, as indicated in Table 1, for as long as the six-month rolling average SC remains above 400 $\mu\text{S}/\text{cm}$. If State water quality standards for those parameters listed in Part II of Table 1 are not exceeded for three (3) consecutive months of analytical water quality monitoring at this increased frequency, the frequency of sampling for those parameters may be modified to once (1) per quarter until the provisions of Part i) in this section become applicable.

iv) Samples that are required quarterly should be collected at least ten (10) days apart, and the amount of precipitation for the previous 24-hour and 120-hour periods should be recorded on-site and reported (to the nearest 0.1 inch) as part of the sampling report. Samples that are required twice per month should be collected at least five (5) days apart, and the amount of precipitation for the previous 24-hour and 120-hour periods should be recorded on-site and reported (to the nearest 0.1 inch) as part of the sampling report.

4. Sampling Locations

Samples should be taken from the following locations:

- a. One in-stream monitoring site located immediately below the toe of the sediment pond (e.g. within the first 10 meters of stream not directly impacted by construction of the embankment for the pond itself);
- b. One in-stream monitoring site located as far downstream of the pond as possible in the project tributary draining the fill, but upstream of any potential backwater effects from Stacy Branch. The sampling point should be located in a stream reach that is as free of disturbance as possible with a relatively natural and intact riparian zone;
- c. One in-stream monitoring site located immediately downstream of the project tributary's confluence with Stacy Branch, taking into account a reasonable length of stream to allow thorough mixing of surface waters (e.g. 10 meters);

- d. One in-stream monitoring site located in Stacy Branch immediately upstream of the confluence referenced in 4.c above;
- e. One in-stream monitoring site located in Carr Fork immediately upstream of the confluence with Stacy Branch;
- f. One in-stream monitoring site located in Carr Fork immediately downstream of the confluence with Stacy Branch, taking into account a reasonable length of stream to allow thorough mixing of surface waters (e.g. 10-20 meters).

5. Reporting

Reports shall contain tabulated data (including sample station identification, date, and time) and graphs necessary to present information clearly and concisely, including all such tables and graphs necessary to summarize and present the entire period of record for each parameter and sample station. Latitude and longitude coordinates of all water quality monitoring locations with the applicable datum identified must be provided along with photographs and figures illustrating all sample locations. Calibration records of all *in-situ* multi-probe or single-probe water quality instruments and laboratory reports showing the analytical results must also be submitted.

All results should be clearly labeled with the applicable CWA permit number and KDNR DMP number and submitted to KDOW, the Corps, and the EPA Region 4. Reports shall be submitted as hard copy and electronically as pdf documents on CD (compact disc). All data shall also be submitted in electronic spreadsheet format (e.g. Microsoft Excel or compatible format).

Reports should be sent to: EPA Region 4 Water Protection Division
 Wetlands, Coastal & Oceans Branch, Mining Section
 61 Forsyth Street SW
 Atlanta, GA 30303-8960

C. In-stream Biological Monitoring

The permittee should implement an annual biological assessment during low-flow conditions within proper sampling index periods using approved state protocols.

1. Concurrent in-stream monitoring

In-stream samples for SC, TDS, pH, temperature, and dissolved oxygen should be taken concurrently at the same locations as the benthic samples.

2. Methods

Sampling should be avoided during periods of excessive precipitation and scouring floods. Both fish and benthic macroinvertebrate studies should be performed for water bodies that are conducive to fish assessments.

When conducting in-stream biological monitoring, the permittee must follow the appropriate and approved KDOW protocols, standard operating procedures, and quality

assurance requirements as specified in the QAPP. The QAPP shall be submitted to the Corps, the EPA R4 and KDOW within 30 days of permit issuance. The protocols are available on KDOW's website at:

<http://water.ky.gov/permitting/Pages/Mining.aspx><http://water.ky.gov/permitting/Pages/Mining.aspx>

3. Sampling Frequency

Sampling times will occur consistent with accepted Kentucky protocols (i.e. sample index periods). Sampling will occur annually through final bond release.

4. Sampling Locations

Sampling will be conducted in the Stacy Branch watershed at the same locations as shown above for in-stream chemical monitoring at Special Permit Condition II.C.4. In addition, biological sampling will occur at the following stations in the Yellow Creek watershed:

- a. One in-stream monitoring site located in Yellow Creek immediately upstream of its confluence with the unnamed tributary draining the valley where the former hollow fill #5 was to be located;
- b. One in-stream monitoring site located in Yellow Creek immediately upstream of its confluence with Carr Fork, but upstream of any potential backwater effects from Carr Fork;

5. Reporting

Reports shall contain tabulated data (including sample station identification, date, and time) and graphs necessary to present information clearly and concisely, including all such tables and graphs necessary to summarize and present the entire period of record for each parameter and sample station. Latitude and longitude coordinates of all water quality monitoring locations with the applicable datum identified must be provided along with photographs and figures illustrating all sample locations. Calibration records of all *in-situ* multi-probe or single-probe water quality instruments and laboratory reports showing the analytical results must also be submitted.

All results should be clearly labeled with the applicable CWA permit number and KDNR DMP number and submitted to KDOW, the Corps, and the EPA Region 4. Reports shall be submitted as hard copy and electronically as pdf documents on CD (compact disc). All data shall also be submitted in electronic spreadsheet format (e.g. Microsoft Excel or compatible format).

Reports should be sent to: EPA Region 4 Water Protection Division
Wetlands, Coastal & Oceans Branch, Mining Section
61 Forsyth Street SW
Atlanta, GA 30303-8960

